

**REMARKS**

Claims 13, 14 and 22 are pending in this application. The Examiner rejected Claims 13, 14 and 22 under 35 U.S.C. 103(a). No claim has been previously allowed.

**Neither *Seya* nor *Maluf* Shows or Suggests  
the Invention of Claims 13 and 14**

The Examiner maintained the rejection of Claims 13-14 under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 6,370,169 to *Seya* et al. ("*Seya*") in view of U.S. Patent No. 5,731,874 to *Maluf* ("*Maluf*"). This rejection is respectfully traversed.

The Examiner contended that the Applicant's previous argument was unpersuasive because the Applicant did not claim any structure or structural cooperative relationships to support the functions of producing periodic signals with a phase varied according to a diffraction direction of the diffracted light. The Examiner suggested that the Applicant use means or step plus function format. The Applicant has amended Claims 13 and 14 into the means plus function format. Thus, all the functional limitations in Claims 13 and 14 should now be given consideration.

The Examiner contended that *Seya* discloses a wavelength selective device that includes a phase detector 22, a reference optical wavelength as part of a wave length regulator 25, and controlling the wavelength of the variable light source 10 according to the phase difference between the reference 25 and the output of the variable light source 10. The Examiner also alleged that *Maluf* teaches the use of a diffraction grating and detector array to monitor the wavelength of a beam, and that it would have been obvious to someone of ordinary skill in the art to modify *Seya* to include the wavelength monitoring system that utilizes the diffraction detection systems disclosed in *Maluf* to better control the wavelength of a variable wavelength light source.

Claim 13 requires, among other elements, an optical diffraction means for diffracting the control target light entered from the variable wavelength light source into a direction corresponding to the optical wavelength of the control target light. Claim 13 also requires a periodic signal generation means for detecting a diffraction light diffracted by the optical diffraction means and generating periodic signals with a phase varied according to a diffraction direction of the diffraction light. Further, Claim 13 requires a phase detection means for detecting a phase difference between a phase of the periodic signals and a phase corresponding to a reference optical wavelength, and controlling the variable wavelength light source by feeding back the phase difference to the variable wavelength light source such that the optical wavelength of the control target light is controlled by an optical frequency pulling with respect to the reference optical wavelength according to the phase difference. In other words, as shown in the embodiment of Fig. 7, the optical diffraction means is provided between the variable wavelength light source and the periodic signal generation means, and the periodic signal generation means provides input to the phase detection means.

In contrast, *Seya* discloses in Fig. 1 that the elements provided between the wavelength variable light source 10 and the phase detector 22 include only a lens 12, a deflector 13, a mirror 20 and an optical detector 21. *Seya* fails to disclose a periodic signal generation means which generates periodic signals with a phase varied according to a diffraction direction of the diffracted light, as recited by Claim 13. *Seya* describes the utilization of a wavelength selective storage medium 15 with a marker hole 16. *Seya* does not describe or suggest that diffraction grating can be utilized.

On the other hand, *Maluf* discloses a discrete wavelength spectrometer which uses diffraction grating for the purpose of separating different wavelength components contained in the incident beam. Since *Seya*'s device does not require diffraction grating,

there is no motivation to combine *Seya* and *Maluf* to include the diffraction grating of *Maluf* in the manner suggested by the Examiner. Moreover, the diffraction grating of *Maluf* functions differently from that of the invention of Claim 13 because the diffraction grating of *Maluf* does not diffract the control target light into a direction corresponding to the optical wavelength of the control target light.

*Seya* and *Maluf* fail to disclose an optical diffraction means for diffracting the control target light into a direction corresponding to the optical wavelength of the control target light and a periodic signal generation means for detecting a diffraction light and generating periodic signals with a phase varied according to a diffraction direction of the diffraction light, as recited in Claim 13. Accordingly, Claim 13 would not have been obvious to one of ordinary skill from the cited references, at the time the Applicant made the claimed invention.

Claim 14 depends from independent Claim 13. The remarks made above in support of the independent Claim 13 are equally applicable to distinguish the dependent claim from the cited references.

***Seya, Maluf and Takeda Do Not Show or Suggest  
the Invention of Claim 22***

Claim 22 stands rejected under 35 U.S.C. 103(a) as unpatentable over *Seya* in view of *Maluf*, and further in view of U.S. Patent No. 5,544,183 to Takeda ("*Takeda*"). This rejection is respectfully traversed.

Claim 22 is a corresponding method claim of the apparatus claim of Claim 13 and the remarks made above in support of Claim 13 also apply to Claim 22. *Takeda*'s disclosure of a reference signal generation means and a phase comparator does not overcome the teaching deficiencies of *Seya* and *Maluf*. Thus, Claim 22 also would not have been

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obvious to one of ordinary skill from the cited references at the time the Applicant made the claimed invention.

**CONCLUSION**

The foregoing is submitted as a complete response to the Office Action identified above. This application should now be in condition for allowance, and the Applicant solicits a notice to that effect. If there are any issues that can be addressed by telephone, the Examiner is asked to contact the undersigned at 404.685.6799.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Brenda O. Holmes", with a stylized, flowing script.

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